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In Response

Behavior Analysis, Amelioration, and the Control of Human Behavior

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Neuringer (1984) has made an important contribution by urging basic operant researchers to become more heavily involved in ameliorative experimentation which has potential for solving significant human problems. Moreover, as Neuringer indicates, self-experimentation offers a relatively unexplored form of ameliorative experimentation in critical areas such as self-control and verbal behavior. However, in stressing the importance of amelioration and self-experimentation, Neuringer provides what may be a somewhat misleading presentation of two concepts that are fundamental to understanding the unique place of behavior analysis in the history of psychology, and the potential that it has for influencing the future of psychology.

The first issue is the criteria for assessing the effectiveness of our science and for determining the effect it may have on the future development of the larger field. To paraphrase Neuringer, "Can *behavior analysis* (not basic operant research alone) set the direction for a functional and viable science of psychology?" The answer to this question is, "Yes," but only if we in the behavioral field, both basic and applied, continue to place top priority on that characteristic of behavior analysis which sets it apart from all other efforts in psychology: the ability to provide precise control of behavior. While we agree with Neuringer that amelioration should be added to the melange of criteria now guiding basic operant research, we would argue that progress toward leadership in the science of behavior will be more rapid if we continue to place our major emphasis upon the systematic extension of the principles, tools, and technology for the *control of behavior.* An emphasis on amelioration, while vitally important, will not necessarily move us ahead as a *science.* Conversely, the development of an increasingly sophisticated technology for the precise control of complex human behavior will rapidly advance our scientific status, and will simultaneously provide us with more powerful tools for amelioration.

The second and perhaps more critical issue raised by Neuringer is whether behavior is determined and whether it is possible to predict and control behavior. Neuringer (1984, p. 402) stated, "Behavior is often not determined, and no matter how much information we scientists gain, we shall never reliably predict or control much significant behavior." Those familiar with the effect of schedules of reinforcement know that it is possible to predict and control behavior with great precision. Moreover, the consensus of those in the applied field would doubtless be that the *Journal of Applied Behavior Analysis* contains numerous examples of the control of *significant* human behavior. With the abundance of experimental evidence which clearly demonstrates our ability to predict and control behavior, we might be inclined to disregard Neuringer's doubts regarding determinism and the possibility of behavior control. But the issue is more important than personal predilection. "Determinism" is an empirical generalization which arises from scientific activity. It is a useful assumption which promotes the survival of science and our culture because it encourages a search for causes. By its very nature, science must be embedded in a philosophy of deter-

minism. If there are no "fixed linkages" between events in our world, why engage in experimentation?

The discussion by Neuringer regarding prediction and control illustrates the conceptual snares that await when we confuse the issue of prediction with the issue of control. Skinner dealt with a similar issue in the epilogue to *Verbal Behavior* (1957, p. 457) when he observed that we should not expect the science of behavior to explain random verbal behavior any more than we would expect the science of physics to explain random changes in room temperature without knowledge or control over the variables of which room temperature is a function. The verbal behavior of an individual and the change in room temperature are no less controlled because we are *unaware* of the controlling variables. If people learn to produce an apparently random series of numbers when they have a good reason to do so, then the behavior serves as an illustration of a deterministic system, not an exception to it.

In the hypothetical example given by Neuringer, the task was to predict the subject's choice of ice cream. A scientist with a behavioral perspective would agree that it is impossible to predict behavior without knowledge or control of the contingencies of reinforcement, but would indicate that choice behavior can be quite easily predicted by controlling the reinforcers responsible for the behavior. In Neuringer's example, contrived reinforcement could easily be shown to determine a person's choice of flavors. With appropriate deprivation and social conditions, we could soon have a subject who "voluntarily" chooses only chocolate. Moreover, we could predict his choice behavior with great accuracy.

Indeed, we cannot continue to operate as if we have an eternity to solve pressing human problems. Basic operant research must begin to develop ways to bring the powerful automated technology of the laboratory to bear on amelioration of significant human problems. But if behavior analysis is to assume a place of leadership in the science of behavior, our first priority must be, not upon amelioration, but upon extending the technology of the *control of behavior.* To the extent that we build and expand upon this scientific-technological base, we may also eventually control the future of the science of behavior.

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